INDUSTRIAL HYGIENE SAMPLING GUIDE
Second Edition January 1991

INTRODUCTION

This guide contains a compilation of sampling recommendations for specific chemicals which the Navy has in-house analytical capability through its four Consolidated Industrial Hygiene Laboratories located at the Navy Environmental and Preventive Medicine Unit Two (NAVENPVNTMEDU TWO), Norfolk, VA; NAVENPVNTMEDU SIX, Pearl Harbor, HI; and NAVENPVNTMEDU FIVE with laboratories at San Diego, CA and Mare Island Naval Shipyard, Vallejo, CA. This guide is a concise reference for the industrial hygienist in the proper submission of industrial hygiene air samples, bulk samples and biological samples. The guide lists the analyte or substance, the Chemical Abstracts Service Registry Number (CAS #) for the substance, the analytical method used by the laboratory in performing the analysis, the sampling media, the recommended air volume, the sampling rate, special instructions for the industrial hygienist submitting the sample, and location of laboratory which can analyze the sample (i.e., M= Mare Island, N= Norfolk, P= Pearl Harbor, and S= San Diego). Customers should submit samples to the laboratory which is located nearest them. If that laboratory does not have the analytical capability you need, call the laboratory to verify this fact and choose a laboratory which provides the needed service. Since all laboratories are constantly updating their analytical services, always check with the closest laboratory first.

NOTE: The mention of specific company names and products does not constitute endorsement by the Navy Environmental Health Center.

LABORATORIES

As of 1 October 1989, all Consolidated Industrial Hygiene Laboratories are owned by the Navy Environmental Health Center's Echelon IV commands. The following information for each laboratory is provided:

(1) Officer in Charge
Navy Environmental Preventive Medicine Unit Five
NAVENPVNTMEDU FIVE
Industrial Hygiene Laboratory
Mare Island Naval Shipyard
Bldg 201, Mail Stop 14
Vallejo, CA 94592-5100

Frank D. Kieffer, Director of Laboratory
(707) 646-2458/4351; AUTOVON 253-2458/4351

(2) Officer In Charge
Navy Environmental Preventive Medicine Unit Five
NAVENPVNTMEDU FIVE
Industrial Hygiene Laboratory
NAS North Island, Bldg 14, Wing 4
San Diego, CA 92135-5153

Dr. R.J. Holland, Director of Laboratory
(619) 545-4315; AUTOVON 526-4315

(3) Officer In Charge
Navy Environmental Preventive Medicine Unit Six
NAVENPVNTMEDU SIX
Industrial Hygiene Laboratory
Pearl Harbor Naval Shipyard
P.O. Box 121, Bldg 1750
Pearl Harbor, HI 96860-5080

Dr. Roy M. Ishikawa, CIH, Director of Laboratory
(808) 474-4242; AUTOVON 430-0111 EXT 474-4428

(4) Officer In Charge
Navy Environmental Preventive Medicine Unit Two
NAVENPVNTMEDU TWO
Industrial Hygiene Laboratory
Naval Station, Bldg X336
Norfolk, VA 23511-6288

George Lindsay, CIH, Director of Laboratory
(804) 444-4179; AUTOVON 564-4179

GENERAL POLICY

The industrial hygiene laboratories provide analytical support services for samples submitted through the BUMED Industrial Hygiene Offices. The analytical instrumentation available at the laboratories is primarily designed for quantitative analysis only and does not allow general qualitative determinations of unknown mixtures and unknown bulk samples or testing for compliance with manufacturer's specification. This type of information is available from the manufacturer in the forms of product literature and material safety data sheets.

QUALITY ASSURANCE

The four CIHLs are accredited by the American Industrial Hygiene Association and routinely participate in all applicable round robin testing programs. The AIHA accreditation program specifies operational guidelines for maintaining satisfactory performance, including qualified personnel, proficiency analytical testing, adequate facilities, quality controls, equipment maintenance, documentation and periodic site audits. In addition to this accreditation program, all laboratories participate in several quality control programs for monitoring daily performance. Both internal and external quality control samples are analyzed to assure accuracy and precision of results. Some of the techniques utilized include replicate analyses, recycles, spiked controls, commercial reference controls, daily instrument calibration, control charts, regression analyses, data review, reagent and media blanks. Each laboratory maintains its own quality control manual, which gives extensive description of the quality assurance program.

LABORATORY ANALYTICAL EQUIPMENT

The primary analytical instrumentation of each laboratory consists of gas chromatographs, atomic absorption spectrophotometers (both flame and graphite furnace technologies), UV/VIS spectro-

photometers, infrared spectrophotometers, high performance liquid chromatographs, ion specific electrode meters, ion chromatographs, balances and microscopes (both phase and polarizing).
An Inductive Coupled Plasma Spectrometer, a Gas Chromatograph/ Mass Spectrophotometer, and a X-Ray Diffraction Unit are located at various labs. **(See page 8 for applications and locations.)**

SAMPLE SUBMISSION REQUIREMENTS

Sample Submission Form

Air, bulk, and wipe samples must be submitted on Navy Occupational Health Information Management System (NOHIMS) forms S2A, S2B, and S5 respectively. Copies of these forms and instructions for the proper completion are provided in the Navy Environmental Health Center Technical Manual NEHC-TM89-5, "NOHIMS Industrial Hygiene Forms Definitions".

Biological samples (i.e., blood leads, urine mercuries) may be submitted on Government Form DD 1222. If you do not have this form, or an acceptable alternate sample submission form which has been approved by the laboratory you are using, you may duplicate the DD 1222 provided (see page 5) and send the original and one copy to the laboratory. Items 1, 2, 6, 8, 9, 10, 16, and 17 must be completed and the form must be signed and dated in item 15. In item 16, specify additional information such as the name of patient and social security number, identification number of sample, and other information or unusual conditions that may aid the chemist with the analysis (i.e., date and time sample was collected, medical facilities where collected, etc.). In item 17 please include a point of contact and the commercial and autovon phone numbers of a person who has direct knowledge of the sample.

Sampling Requirements

Always review the preferred method of sampling given in this guide and amplified by the appropriate analytical method (i.e. NIOSH or OSHA analytical method manuals, etc.). If the recommendation cannot be followed, contact the laboratory prior to sampling for additional guidance.

The recommended air volumes provided in this guide are usually a range of volumes, with the higher value used in the majority of sampling. The lower air volume should only be used when 1) the exposure is at an unsafe/unhealthful exposure level such as an

exposure exceeding the Time Weighted Average (TWA) value given in the Occupational Safety and Health's Final Rule Limits, 2) the application of a Short Term Exposure Limit (STEL) or a Ceiling value is applicable to the substance, and 3) the operation limits the amount of sampling time. As a general rule, the recommended sampling volumes will allow a detection limit of 10-50% of the TWA, in most cases.

Sample Packaging and Shipping Requirements

1. Small sample media such as sorbent tubes and filter cassettes should be bound together or placed in plastic bags to reduce the possibility of being overlooked or discarded. Sample cassettes and sorbent tubes should not be wrapped in tape. Simply affix a legible sample submission number (preferably a preprinted label) to the sample and neatly package it to avoid shipping damage.

2. Submit separate request forms for each type of analyses as follows: Segregate and ship your samples in individual categories of air, bulk, wipe, and biological samples subdivided by metals and organics.

3. Request for analytes should not exceed 3 or 4 organic compounds per sorbent tube. Always check compatibility information on page 8 to ascertain the contaminants collected are compatible with each other and with the analytical procedure. Call the laboratory if in doubt regarding compatibility. Filter samples submitted for metal analyses by Atomic Absorption Spectrophotometry to laboratories at Norfolk, Pearl Harbor and San Diego, must not contain more than 3 or 4 metals. Please list the requested metals in order of priority. When multielement analyses are required send samples to Mare Island laboratory. (See Metal Screen in the sampling guide or NIOSH method #7300 for detailed instructions.)

4. When requested, ship small quantities of bulk organic solvents in screw cap (teflon lined) glass vials (e.g., 7.4 milliliter vials, Supelco # 2-3295; or 15 milliliter vials, Supelco #2-3296; or 22 milliliter vials, Supelco #2-3297) to assist the chemist in the analysis of the air samples. Prior to shipment place a permanent ink mark at the level to which the vial is filled. This allows the chemist to determine potential leakage during shipment. Rarely will more than 5.0 milliliters be required. Never ship the bulk and air samples in the same shipping package. Provide information telling the chemist which bulk sample corresponds to the air samples.

5. Most determinations require a minimum of two blanks or one blank for every ten samples submitted, whichever is larger. Remember to always provide 20-30 ml of unexposed impinging solution to be used by the laboratory as reagent blanks and in quality control.

Sample Packaging and Shipping Requirements (continuation)

6. All references to water are for deionized or double distilled water.

7. When submitting multielement analysis of hard metal alloys, the bulk sample must be in the form of fine filings, powder or very thin wire.

8. The preferred refrigerant for samples that require refrigeration is prefrozen gel blocks. Ice may be used for local shipments, but the ice must be doubly wrapped in plastic ziplok bags to avoid leakage.

9. Shipping containers should be appropriately labeled such as "Fragile", "Refrigerated Material", "Liquid Samples", etc.

10. All samples and materials being packaged, labeled and shipped are governed by local and Federal regulations. Compliance with these regulations is the responsibility of the person submitting the samples.

11. In the case of unusually large shipment or high priority samples, please contact the laboratory prior to submission.

Sample Turnaround Times

Samples will be analyzed on a "first come, first served" basis. Urgent samples will be given special priority and analyzed in one to three working days when the laboratory has been notified in advance of the shipment and when the samples have arrived by special shipment or priority mail. Most routine samples will be analyzed within 20 working days after receipt of the sample. If you have not received your analytical report after 30 working days,

please notify the laboratory and check on the status of the samples. When the samples are sent to a contract laboratory 30 to 60 days may be required before a report is sent. In cases where our Consolidated Industrial Hygiene Laboratories act as middlemen in contracting the analysis, it may be advisable for you to contract directly with a local AIHA accredited industrial hygiene laboratory. Call your CIHL for a recommended contract laboratory.

Sample Compatibility

The following compounds require special processing for analysis and consequently cannot be analyzed for other compounds in the same sample:

All Cellosolves
All impinger analytes
All isocyanates
Acetic Acid
Acrolein
Acetonitrile
Ammonia
Aniline
2-Butanone
Butyl Cellosolve
Camphor
Cellosolve
Chlordane
Chromic Acid
Coal Tar Pitch Volatiles
Cresols
Ethyl ether
Ethylene glycol
Ethylene oxide
Formaldehyde
Hydrazine
Methanol
Methyl Cellosolve
Methyl methacrylate
2-Nitropropane
PCBs
PGDN (Otto Fuel)
Phenol
Pyridine

The following groups of compounds require special processing for analysis. More than one compound within each group can be analyzed in the same sample, but compounds outside the group are incompatible and cannot be analyzed within the same sample:

Group I- Ethyl Alcohol, Isopropyl Alcohol, and t-Butyl Alcohol
Group II- n-Butyl Alcohol, s-Butyl Alcohol, iso-Butyl Alcohol and n-Propyl Alcohol
Group III- Iso-Amyl Alcohol, Diacetone Alcohol, and Cyclohexanol
Group IV- 2-Methoxyethanol, 2-Ethoxyethanol, and 2-Butoxyethanol

LABORATORY SPECIFIC SAMPLES

Each of the CIHLs has declared an area of expertise and it is recommended that only these laboratories be used in those speciality areas. The areas and labs are:

Speciality Area	Laboratory
Multielement analysis using Inductive Coupled Plasma (ICP) Spectrometry, following NIOSH #7300.	Mare Isl. Lab

Advanced High Performance Liquid Chromatography (HPLC) and various biological analyses, which are not routinely done by other CIHLs.	**San Diego Lab**
Gas Chromatography/Mass Spectrometry (GC/MS)	**Norfolk Lab**
X-Ray Diffraction (Capability available June 91; Call lab to verify exact date)	**Pearl Harbor**

ROUTINE BIOLOGICAL SAMPLES

All biological samples should be appropriately labeled with the subjects's name, social security number, date and time of collection, the test or determination to be made, and the medical facility where the sample was collected.

Blood Lead and Zinc Protoporphyrin

Collect in one of the following Becton Dickinson (BD) Vacutainer Systems:

BD Number	Description	Top Color
6488	Sodium heparin tube for whole blood (Specifically for blood lead determn)	Brown
6527	Sodium heparin tube for whole blood (Made for trace element studies)	Royal blue
6541	Sodium heparin tube for plasma (Made for plasma studies)	Green

Sample must be thoroughly mixed with the heparin immediately following collection. Keep samples refrigerated (do not freeze) and ship to the nearest laboratory using priority shipping methods. Use an insulated shipping container, such as a styrofoam shipper. For shipping long distances, freezer packs and express delivery are required.

Urine Mercury

By BUMED INSTRUCTION 6260.2, dated 7 November 1988, biological monitoring for mercury is no longer required. The potential for personnel exposure to elemental mercury vapor has been greatly reduced by the use of preencapsulated amalgams. Industrial hygiene surveys have shown routine use of preencapsulated amalgams does not result in overexposure of dental personnel to elemental mercury vapor. Therefore, by this BUMED instruction, neither biological sampling or air sampling is specifically required. Occasionally mercury urine may be prescribed by an occupational health

professional as circumstances warrant. Please note that by OPNAVINST 6000.1 pregnant personnel require a medical evaluation which includes mercury exposure screening. When prescribed, it is required that the urine mercury analysis be performed by one of the CIHLs.

Collect sample (first morning void, if possible) in the standard drug screening plastic bottle (FS #6640-00-165-5778) and add 100 milligrams of potassium persulfate. Hand tighten the lid, and

place each bottle in a ziplok bag to contain any leakage during transit to the laboratory. Ship as soon as possible after collection. Refrigerate during storage and ship in an insulated shipping container, using prefrozen gel blocks and express delivery.

SPECIAL IMPINGER MEDIA PREPARATION AND GUIDELINES ON SHIPPING

Impinger samples should be hand delivered to the laboratory. When this is not possible, the samples should be quantitatively transferred to 20 milliliter glass bottles with Teflon-lined caps (Supelco #2-3297). Always provide the laboratory with a minimum of 20-30 milliliters of unexposed absorbing solution for a reagent blank.

The following impinging solutions are used:

Analyte	Impinging Solutions
Ammonia	0.1 N Sulfuric Acid (Add 2.8 milliliters conc H_2SO_4 to 1 liter of double distilled or deionized water)
Chlorine	0.1% Sulfamic Acid (Add 1 gram Sulfamic Acid to 1 liter of double distilled or deionized water)
Cyanide	0.1 N Potassium Hydroxide (add 5.6 grams KOH to 1 liter of double distilled water or deionized water)
Formaldehyde	1% Sodium Bisulfite solution (1 gram $NaHSO_3$ in 100 milliliters of double distilled or deionized water)
Hydrazine	0.1 N Hydrochloric Acid (add 8.6 milliliters of conc HCl to 1 liter of double distilled water or deionized water)
Phenol	0.1 N Sodium Hydroxide (add 4.0 grams NaOH to 1 liter of double distilled water or deionized water)

Sulfur Dioxide	**0.3 M Hydrogen Peroxide (add 17 ml of 30% H_2O_2 to one liter of double distilled or deionized water)**

NOTE: 20-30 ml of unexposed reagent is required for reagent blank for all impinging solutions above.

SPECIAL ANALYSES

Chromium and Chromates

Chromium metal, Cr(II) and Cr(III) compounds are collected on mixed cellulose ester filters (MCEF) and analyzed using Atomic Absorption Spectrometry. Cr(VI) compounds cannot be determined if sampled on a MCEF.

Chromium in the +6 oxidation state (i.e., chromium trioxide, all chromates and dichromates) must be collected on PVC filters, with backup pads. If other filter materials are used, the Cr(VI) will be reduced to the Cr(II) or Cr (III) states and thus give a lower value for Cr(VI). After sampling for Cr(VI), separate the filter from the pad and ship the filter to the lab in a suitable glass vial with a teflon cap.

Coal Tar Pitch Volatiles (CTPV)/ Coke oven Emissions (COE)/Selected Polynuclear Aromatic Hydrocarbons (PAHs)

The coal tar pitch volatile test is designed for coal tar which has a high concentration of PAHs. The test consists of two parts:

1. Dissolving the sample in benzene and evaporating half of the benzene and determining how much benzene soluble is present. This part of the test is nonspecific, since almost all organics will dissolve in benzene.
2. To determine whether this material is a hazardous coal tar pitch or asphalt or just plain organic, a second test is performed on the remaining benzene. It is analyzed for Chrysene and Benzo(a)Pyrene (BAP) using OSHA's test for PNA.

If the Chrysene and the BAP are greater than 3 %, the sample is considered coal tar pitch and the 0.2 mg/m3 standard is applied. If the concentrations are less than 3 %, the material is considered asphalt, i.e., plain organics, and the 5 mg/m3 is applied.

Procedure:

Air samples are collected by drawing known amounts of air through cassettes containing glass fiber filters (GFF). The filters are analyzed by extracting with benzene and gravimetrically determining the benzene-soluble fraction (BSF). If the BSF exceeds the appropriate exposure limit, then the rest of the sample is analyzed by high performance liquid chromatography (HPLC) with a

fluorescence or ultraviolet detector to determine the presence of selected PAHs.

Sampling Procedures:

The recommended air volume is 960 liters at 2.0 LPM. Each GFF must be transferred to a separate vial after sampling and the vial sealed with a Teflon-lined cap. Samples must be protected from direct sunlight by wrapping aluminum foil around the vial.

Environmental Samples

The CIHLs are primarily responsible for analyzing occupational health samples representing workplace exposures of 8 hours or less, using NIOSH or OSHA analytical methods. EPA methods emphasize outside environmental exposures over long periods of time. Contact the CIHL before sampling in a nontraditional, nonoccupational manner.

Fibers Counts and Asbestos Identifications

These determinations are to be made in the field or at the local activity level. The CIHLs will assist on a case-by-case basis, however, prior approval for accepting these samples must be received from the CIHL before submitting fiber counts and asbestos identification samples to the CIHLs. Laboratories performing asbestos tests must be proficient in the appropriate proficiency testing programs, i.e., the Proficiency Analytical Testing (PAT) program for fiber counts and the NAVENVIRHLTHCEN's contractor-operated program for bulk asbestos identification.

Ozone

There is no reliable industrial hygiene chemical test for ozone. When ozone is present, oxides of nitrogen are present and interfere with the ozone test. Since the oxides of nitrogen can be accurately determined, they should be sampled when one suspects over exposures of ozone. Detector tubes may give valuable information when evaluating ozone and oxides of nitrogen.

PCB Bulk Samples

The CIHLs at Norfolk, Pearl Harbor and San Diego routinely determine the PCB content in bulk samples as they relate to

occupational health, with a lower reporting level of 0.1% or 1000 ppm. The laboratories do not routinely analyze to the EPA standard of 50 ppm for waste disposal purposes.

Silica (Chrystalline Silica) Analysis

This method determines silica in respirable dust by the OSHA method. The sample filter used is a 5 um PVC membrane filter (SKC # 225-8-01). Pearl Harbor lab requires SILICAL PVC filters available from Omega Specialty Instrument Co., Chelmsford, MA 01824, phone (508) 256-5450. The respirable dust sample is collected at 1.7 LPM for 800 to 1000 liter of air. Care should be exercised to assure a loading of less than 2.0 mg.

Bulk samples can be semi-quantitatively analyzed for quartz and cristobalite.

BULK SAMPLE SUBMISSIONS

The primary function of the Industrial Hygiene Laboratories is to analyze breathing zone air samples for contaminants. The labs do not routinely perform analyses of bulk samples to determine what components they contain or whether they meet manufacturer's specifications. Such information is available by writing the manufacturer and requesting product literature and material safety data sheets. Products for which this information is not available should not be used in the Navy system. Bulk samples should be submitted to the laboratories only under the following conditions:

(1) When the laboratory requests a bulk, as is required in the analytical method (e.g., PCBs, Naphthas, etc.).

(2) When all other means of obtaining information on the chemical composition of the material have been exhausted and prior approval has been given by the laboratory.

ABBREVIATIONS USED THROUGHOUT THE GUIDE

M	Mare Island Laboratory
N	Norfolk Laboratory
P	Pearl Harbor Laboratory
S	San Diego Laboratory
@	at the concentration of
AMBERSORB	Special type of adsorption tube
Aq	aqueous
CIHL	Consolidated Industrial Hygiene Laboratory
CHROMOSORB	Special type of adsorption tube
CT	Charcoal tube (see special instructions for a part number)
2CT	Two charcoal tubes connected in series
FLORISIL	Special type of adsorption tube
FLT	Filter
GFF	Glass fiber filter
HYDRAR	Special type of adsorption tube
L	liters
LAB	Laboratory developed analytical method
LPM	liters per minute
0.8 MCEF	Mixed cellulose ester filter, 0.8 micrometer pore size
mg/m3	milligrams per cubic meter

ml	milliliters
mm	millimeter
NIOSH	National Institute for Occupational Safety and Health
ORBO	Adsorption tube trade marked by Supelco
OSHA	Occupational Safety and Health Administration
OVS-2	Special collection device for pesticides, available from Forest Biomedical.
ppm	parts per million
PTFE	Polytetrafluoroethylene filter
PVC	Polyvinyl chloride filter, 5 micrometer pore size
SG	Silica gel sampling tube
ST	Sorbent tube
TENAX	Special type of adsorption tube
um	micrometer
XAD	Special type of adsorption tube

SOURCES OF ANALYTICAL LITERATURE AND SAMPLING MEDIA

Manuals

The NIOSH analytical manuals can be obtained from:

U.S. Government Print Office
Washington D.C. 20402
(NIOSH Manual of Analytical Methods, 3rd Edition, Vol 1 and 2 dated Feb 84; S/N 917-011-00003-6, Price: approximately $40)

The OSHA analytical manuals can be obtained from:

ACGIH Publications
6500 Glenway Ave., Bldg D-7
Cincinnati, OH 45211-4438
Tel (513) 661-7881
(Publication #4542 Price: approximately $150)

SKC, Inc.
334 Valley View Road
Eight Four, PA 15330-9614
Tel (800) 752-8472
(Catalog No. 877-30 Price: approximately $150)

The OSHA Chemical Information Manual can be obtained from:

SKC, Inc.
334 Valley View Road
Eight Four, PA 15330-9614
Tel (800) 752-8472
(Catalog No. 877-31 Price: approximately $52)

Filters and Sorbent Tubes

Filters and sorbent tubes can be obtained from a number of sources; however, this manual sights SKC order number for filters and tubes, simply because of convenience. Special attention should be given to 'SKC Guide to NIOSH/OSHA Air Sampling Standards' which is in the SKC catalog.

Filters and Sorbent Tubes (continuation)

SKC, Inc.
334 Valley View Road
Eighty Four, PA 15330-9614
Tel: (800) 242-8472

SKC, Gulf Coast
9827 Whithorn Drive
Houston, TX 77095-5027
Tel: (800) 225-1309

SKC, West
P.O. Box 4133
Fullerton, CA 92634-4133
Tel: (800) 228-4103 (Inside CA)
Tel: (714) 992-2780

SKC, South
P.O. Box 2016
Appomattox, VA 24522-2016
Tel: (800) 752-7684

Supelco, Inc.
Supelco Park
Bellefonte, PA 16823-0048
Tel: (800) 247-6628
(814) 359-3441/3446

Forest Biomedical
757 Lake Point Drive
Suite 1-U
Salt Lake City, UT 84107
Tel: (801) 269-1327

Passive Monitors

3 M Company
Occupational & Environmental Safety Division
3 M Center, Bldg 224-2S-25
St. Paul, MN 55144-1000
Tel: (800) 752-3623 (Federal System Group orders)
(800) 243-4630 (Technical Information, only)

R.S. Landauer

Glenwood Science Park
Glenwood, IL 60425
Tel: (708) 755-7000

Preprinted Sample Number Labels

Shamrock Scientific
34 Davis Drive
Bellwood, IL 60104
Tel: (800) 323-0249

Sample collection bottles, vials, and supplies

Supelco, Inc.
Supelco Park
Bellefonte, PA 16823-0048
Tel: (800) 247-6628
Tel: 814-359-3441/3446

SKC, Inc. (see addresses above)

GENERAL COMMENTS

Each CIHL welcomes comments and suggestions regarding their service to you, additional method development requirements, alternate sampling techniques, and other input. All questions regarding laboratory service/capability should be addressed to the laboratory which provides the service. Working hours are generally 0730 to 1600 hrs Monday through Friday. If the laboratory can't be reached or additional information is required please call the NAVENPVNTMEDU which owns the laboratory. All comments concerning CIHL program management and additions, corrections and changes to this manual should be addressed to:

Commanding Officer

Navy Environmental Health Center
2510 Walmer Avenue
Norfolk, VA 23513-2617
Attn: NEHC-35
Tel: (804) 444-4657 ext 466
AUTOVON 564-4657

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